

Patent Claims

1. Method for assisting the driver of a vehicle in his steering activity in which a steering torque may be applied to the steering, characterized in that an additional assistance torque M_{ASS} is applied to the steering wheel, by means of which torque the driver of the vehicle is assisted in driving in one lane.
2. Method according to Claim 1, characterized in that a current lane in which the vehicle is moving is determined and a steering recommendation is given to the driver of the vehicle by means of the additional assistance torque M_{ASS} applied to the steering wheel so that the driver of the vehicle remains in the current lane.
3. Method according to Claim 1 or 2, characterized in that a manual torque M_H applied by the driver of the vehicle to the steering wheel or a quantity depending thereon is determined, and the additional assistance torque M_{ASS} applied to the steering wheel is variable as a function of the manual torque M_H .
4. Method according to Claim 3, characterized in that the manual torque applied by the driver of the vehicle to the steering wheel or a quantity depending thereon is determined over a longer period of time; a driver's steering intent is determined according to the characteristic of the manual torque over time; and the additional assistance torque M_{ASS} applied to the steering wheel is variable according to the driver's steering intent thereby determined.

5. Method according to Claim 4, characterized in that at least a maximum value for the additional assistance torque M_{Ass} applied to the steering wheel (maximum assistance torque M_{max}) is preselected; the manual torque M_H applied by the driver of the vehicle to the steering wheel is determined continuously; and the maximum assistance torque M_{max} is adapted dynamically to the manual torque M_H currently being applied by the driver of the vehicle to the steering wheel.
6. Method according to any one of Claims 3 through 5, characterized in that at least one lower limit value (limit torque $M_{H,LOW}$) for the additional assistance torque applied to the steering wheel is preselected; the manual torque M_H applied by the driver of the vehicle to the steering wheel is determined continuously; and the manual torque M_H applied by the driver of the vehicle to the steering wheel is compensated by an additional compensation steering torque when the manual torque M_H thus determined does not exceed the lower limit value (limit torque $M_{H,LOW}$).
7. Method according to Claim 6, characterized in that a signal of the manual torque M_H applied by the driver of the vehicle to the steering wheel is filtered, preferably by a low pass filter of the first order.
8. Method according to any one of Claims 3 through 7, characterized in that at least one lower limit value (limit torque $M_{H,LOW}$) for the additional assistance torque applied to the steering wheel is preselected; the manual torque M_H applied by the driver of the vehicle to the steering wheel is determined continuously and a lane-holding steering

torque which is necessary to guide the vehicle in the current lane is limited to a maximum value at least approximately linearly with an increase in manual torque M_H when the manual torque M_H thus determined exceeds the lower limit value (limit torque $M_{H,LOW}$).

9. Method according to any one of Claims 3 through 8, characterized in that at least one upper limit value (limit torque $M_{H,HIGH}$) for the additional assistance torque applied to the steering wheel is preselected; the manual torque M_H applied by the driver of the vehicle to the steering wheel is determined continuously and a desired steering torque which corresponds to a driver's intent after a steering intervention measure is set when the manual torque M_H thus determined exceeds the upper limit value (limit torque $M_{H,HIGH}$).
10. Method according to any one of Claims 3 through 8, characterized in that the manual torque M_H applied by the driver of the vehicle to the steering is determined continuously; a lane-holding steering torque which is necessary for guiding the vehicle in the lane is regulated; at least one upper limit value (limit torque $M_{H,HIGH}$) for the additional assistance torque applied to the steering wheel is preselected and the lane-holding steering torque is reduced, preferably to the value 0 (ZERO) according to a predetermined function, preferably a time-controlled ramp function.
11. Steering torque regulating module for a vehicle, in particular for implementing a method according to any one of Claims 1 through 10, characterized in that an additional

assistance torque M_{Ass} is applied by the steering torque regulating module to a hand steering wheel of the vehicle, by means of which the driver of the vehicle is assisted in driving in one lane.

12. Vehicle with a vehicle steering system and with a lane guidance system, characterized in that the lane guidance system has a steering torque regulating module according to Claim 11.